REMARKS

Claims 2, 3, 7-14 and 42-63 remain pending after response.

Specification Amendments

Various editorial amendments are made at pages 1, 5, 6 and 8 of the specification. Page 9 is amended to re-insert the original language. No new matter is added by these amendments.

Claim Amendments

The preamble of claim 3 is revised to be consistent with claim 2. Editorial revisions are made in claims 42, 48 and 53. No new matter is added by this amendment.

Translation of EP 1 074 605

As the Examiner has relied on an un-translated reference (EP 1 074 605) in support of the rejection of the claims, applicants submit herewith a copy of an English translation of EP 1 074 605 for review by the Examiner.

Objection to Priority Claim

The Examiner has objected to page 1, line 5, of the specification requesting the insertion of the filing date of parent application 09/566728. The filing date is now inserted, and objection should be withdrawn.

Objection to Claims as being Non-elected

The Examiner objects to claims 3, 7, 42-53, 56, 59 and 62 as being directed to an "invention that is independent and distinct from the invention originally claimed" for the reason that the "claims are drawn to a protein concentrate that had been restricted out in a previous Office action and since applicant had already elected the claims to a protein meal, the claims drawn to a protein concentrate were withdrawn as being non-elected claims". It is noted that claim 3 is an independent claim, and that the remaining claims depend from claim 3. The Examiner accordingly withdraws claims 3, 7, 42-53, 56, 59 and 62 from consideration. Applicant respectfully traverses the withdrawal of these claims from examination.

In response, it is noted that applicant originally elected claims 1-3 and 7-14 for examination on the merits. Elected claim 3 originally depended from claim 1. Claim 1 is now cancelled, and claim 3 written in independent form. The placing of previously-elected dependent claim 3 into independent form does not provide basis for a finding that claim 3 is no longer appropriate for examination. In essence, claim 3 is still claim 3, and should continue to be examined as such. In order to bring claim 3 more into conformance with claim 2, the preamble of claim 3 is amended.

Additionally, those claims which depend from claim 3 should also be examined. In particular, withdrawn claim 7 was also within the original group of elected claims. As claim 7 remains unamended, and now merely depends from elected claim 3, claim 7 certainly should also remain under examination. The remaining claims 42-53, 56, 59 and 62 correspondingly depend from claim 3, and

should remain under examination.

Based on the above, no constructive election has been made with respect to the newly-withdrawn claims.

Rejection under 35 USC 132

The Examiner takes the position that applicant's prior amendment inserted new matter into the specification, and requests that such "new matter" be removed from the specification.

In response, applicants note that their prior amendment cancelled the embodiment defined by claim 1. Applicant accordingly amended the specification to delete the claim 1 embodiment from the specification. While not necessary, applicant so amended the specification to bring the specification into conformance with the scope of the pending claims. Such an amendment does not *per se* constitute new matter, especially as the scope and meaning of the remaining portion of the specification is not changed by the noted deletions, and the pending claims are otherwise well-supported by the amended specification. Indeed, the Examiner's view that such amendments constitute new matter in the absence of "clear reasons" is without legal basis.

However, applicant has again reviewed the specification amendments and deleted any portions that conceivably could be deemed new matter. Other amended portions are retained as being editorial in nature. Cancelled portions directed to the product aspect remain cancelled.

In view of the above, the rejection under 35 USC 132 is believed moot and should be withdrawn.

Applicant's Invention

The pending claims are directed to a novel process for producing nutritionally upgraded oilseed meals for animal diets involving the steps of:

a) providing an oilseed;

b) drying the oilseed;

c) blending unhydrolyzed animal offal with the oilseed; and,

d) cooking the mixture to produce a protein rich fraction, a stickwater fraction and a feed grade oil fraction.

Another option involves the adding of an antioxident to the blend. Yet another option involves the dehulling of the oilseeds before or after the heat treatment.

Applicant's claimed invention is neither disclosed nor taught by the cited prior art.

Rejection under 35 USC 103(a)

Claims 2, 8-14, 54-55, 57-58, 60-61 and 63 stand rejected under 35 USC 103(a) as being unpatentable under 35 USC 103(a) over EP 1 074 605 or Sakai et al '598 or '885 in view of EP 0925723, Kozlowska et al '789 and Bedford '357. This rejection respectfully is traversed.

By way of review, applicant's claims are directed to a process for the preparation of oilseed products in which the oilseed is blended with animal offal, followed by the steps of cooking the mixture of oilseed and animal offal under conditions which improve digestibility, and free cellular water and lipid in the offal. The preparation of products containing animal offal and oilseed in which the oilseed has been treated to remove anti-nutritional components further permits production of end protein and lipid products which have upgraded nutritional values suitable for use in feed for fish or animals.

Applicant's claimed invention is neither disclosed nor suggested by the cited prior art, taken either singly or in combination.

EP '605 (translation attached) is directed to a process for producing edible oil from rapeseed or other oilseeds. In the disclosed process, the seed is classified, dried, crushed, sifted and processed in a press. The reference teaches that the seed is dried at a temperature of not more than 40 °C.

EP '605 fails to disclose or suggest the preparation of mixtures of treated oilseed with animal offal. The only treatment of the oilseed (e.g., rapeseed) disclosed in the reference relates to the exposure of the seed to temperatures below 40 °C for the purpose of reducing the water content of the seed, and drying it. The oilseed is not be subjected to temperatures which would reduce the anti-nutritional components in the seed as provided for in applicant's claimed invention.

Given the fact that the reference neither discloses the combination of the oilseed with animal offal (much less the co-processing of the two together), nor the treatment of the oilseed at sufficiently high temperatures to reduce the anti-nutritional components present therein, the reference cannot be said to teach or suggest the claimed invention.

The '598 patent is directed to the formation of an improved mustard seed flour. In the disclosed process, the mustard flour is prepared by a technique which minimizes the pungency of the mustard using a pressurized process under heating conditions. See column 1, lines 41+, and column 2, lines 3+. The primary purpose of the pressurized heating method is to suppress the decomposition of sinigerin (column 2, line 21+).

More particularly, oil is removed from the mustard seed followed by heat treatment of the thus-processed mustard seed, followed by cooling, drying and grinding the mustard seed to form flour. See column 3, lines 23-28 of the patent.

The '598 patent fails to disclose or suggest any process which comprises combining the thus-produced mustard flour with animal offal in order to obtain nutritionally upgraded oil seed meals, protein concentrates or animal feed grade lipids, whereby such a combination of components is co-processed as required by the present invention.

The '885 patent also discloses the preparation of mustard cake and mustard powder from mustard seed, and is similarly deficient in its teachings. The process is specific to the drying of the mustard seed to a defined moisture

content followed by removal of crude oil from the de-hulled seed at low temperatures (45-55 °C) by pressing (column 1, lines 52+). The use of low temperatures is crucial to practice of the disclosed invention in order to avoid destruction of enzymes.

This is contrary to applicants' process, which involves removal of water-soluble, anti-nutritional components by elevated or rapid heat treatment. This reference is totally silent with respect to the further processing of the mustard product and, in particular, the co-processing with animal offal in the manner claimed. Indeed, the patent is silent with respect to any combination of the mustard seed with animal offal, either in simple combination or being co-processed with same. The '885 patent thus fails to disclose or suggest the claimed invention.

The EP '723 reference is directed to a protein-containing feedstuff produced by subjecting a vegetable protein-containing material to heat treatment, washing the resultant material, and subjecting the washed material to additional heat treatment or thermal drying step by which the moisture content of the material is reduced to 12% or less. Anti-nutritional components are removed by the heating step while retaining nutritional values. The reference states that the product is suitable for use as aquafood, as well as a food source for animals and humans.

There is no teaching in this reference concerning the co-processing of a treated oilseed with animal offal as well as the specific features defined in the applicant's claims such as cooking the co-processed mixture, followed by

separation of the co-processed cooked mixture into different fractions. Thus, the processes of the present invention and the process of the reference yield different and distinct products.

Again, while the reference teaches the removal of anti-nutritional components consistent with applicant's claimed invention, such a teaching does not lead one of ordinary skill in the art to the claimed invention for the reason that the reference is otherwise silent with regard to the co-processing of such material with animal offal in the manner claimed. The EP '723 reference accordingly fails to disclose or suggest the claimed invention.

The '789 patent is directed to a method for the production of a protein concentrate from rape seed. The disclosed process involves the steps of water extraction, removal of the "seed-leaves" under wet conditions, and after obtaining cleaned seed-leaves, the purified seed-leaves are de-oiled and disintegrated by conventional techniques.

At best, this reference teaches the treatment of oilseeds, but does not teach anything further relative to applicants' claims - i.e., there is no process involving the combination of the treatment of oilseeds and blending animal offal with the oilseed followed by a cooking and separation step to obtain products which are derived from the combination of offal and heat-treated seeds. The reference accordingly fails to teach or suggest the claimed invention.

The '357 patent is directed to the production of an emulsified, fluid animal food product by the steps of adding to a fish concentrate a calcium-based

dispersing agent in an amount effective to retain the fish solids in stable suspension, followed by the addition of a fatty material which may contain an animal fat. More specifically, the reference teaches the combination of calcium hydroxide or other calcium compound with the mixture of emulsified fish stickwater (or concentrated fish hydrolysates) and fatty materials which are derived from either a vegetable or a fish source. Molasses is then added to further stabilize the mixture. The fat sources are stated to be suitably acquired from "...vegetable seeds or fruit coats, fish muscle, offal and viscera, and animal sources" (column 2, lines 46+).

The '357 patent fails to disclose the co-processing of animal offal per se with an oil seed, but rather specifically states that if two or more fats are used (namely offal fat and oilseed fat), they are first blended together and not added separately during the process (column 3, lines 1-5). Further, the fish emulsion, consisting of fish viscera with added fat, does not include an oilseed which may be subjected to a rapid heat treatment for producing particulate seed and then mixing the particulate seed with the offal before cooking as in the present invention. The cited patent thus fails to disclose the claimed invention.

The Examiner in the outstanding Official Action finds applicants' previously-submitted distinguishing comments to be non-persuasive. The Examiner asserts that "one cannot show non-obviousness by attacking references individually where rejections are based on combination of references". However, even taking this statement to be true, the Examiner must still present a *prima facie* case of obviousness which demonstrates that one of ordinary skill in the art, when faced with the combined teachings of the cited references, would come into possession

of the claimed invention. The Examiner must, to satisfy her burden, demonstrate that sufficient motivation exists in the cited prior art to combine the respective teachings of the references to result in the claimed invention. *This the Examiner has not done.*

The Examiner points to the teachings of the Bedford '357 patent as providing such motivation. In this regard, the Examiner states that:

> "The Bedford patent teaches the combination as shown by the instant claims. To process them together, when each process was shown separately in prior art, and combining the soybean oil with the offal, which is also taught by the Bedford patent, would require no more than routine skill. Applicant has combined the two sources before cooking, and the reference suggests the combination of soybean oil and fish stickwater obtained by cooking homogenized fish offal. See col. 4, lines 25-57. One of ordinary skill in the art is held accountable not only for the specific teachings of references, but also for the inferences which those skilled in the art may reasonably be expected to draw."

The Examiner fails to actually point to those portions of the cited references deemed to provide the requisite motivation to result in the claimed invention. To merely state that "one of ordinary skill in the art is held accountable not only for the specific teachings of references, but also for the inferences which those skilled in the art may reasonably be expected to draw" merely begs the question of what teachings one of ordinary skill in the art is to be held accountable. Because if those teachings are deficient, any "inferences" that may be drawn therefrom are surely similarly deficient.

Further, the Examiner takes the position that the cited prior art not only shows the "combination as shown by the instant claims" (even though applicant claims a process, not a product), and that somehow the combination of two cooked materials together renders obvious a process whereby such materials are first combined and then cooked together. The Examiner is further apparently of the view that a teaching of soybean oil and fish stickwater satisfies the claimed limitation of combining oilseed and animal offal.

With this in mind, a review of the teachings of the cited references is again in order:

EP '605 limits its teachings to making edible oil from oilseed. No elevated temperature treatment of the oilseed is taught. The reference is silent with respect to animal offal, as well as with respect to the co-processing with animal offal.

The '598 patent is directed to the formation of mustard flour. No mention is made of the combination of mustard flour with animal offal, or the co-processing of mustard flour with animal offal.

The '885 patent is directed to the preparation of mustard flour cake or powder. The patent limits its teachings to low temperature drying. The patent is also silent with respect to the use of animal offal, as well as co-processing with animal offal.

EP '723 is directed to the formation of a protein-containing feedstuff produced by heat treatment of a vegetable protein followed by removal of moisture content. While anti-nutritional components are removed as in applicant's claimed process, the reference is silent with respect to the combination of the product with animal offal, or the co-processing of the product with animal offal as claimed.

The '798 patent is directed to a method for the production of protein concentrate from rape seed. The reference is silent with respect to animal offal, as well as the co-processing of animal offal with the protein concentrate.

The '357 patent (apparently believed by the Examiner to be the most relevant reference) is directed to the production of an emulsified, fluid animal food product. The patent teaches the combination of a fish concentrate with a fatty material that may comprise an animal fat or fat derived from vegetable seeds, offal, etc.

However, the '357 patent is silent with respect to the co-processing of animal offal with an oilseed in the manner claimed. Further, the patent does <u>not</u> show the "combination as shown by the instant claims". Indeed, the only "combination" taught by the patent is an emulsified composition comprised of an aqueous fish concentrate and a fatty material – however, even if the fish concentrate could be considered to be "animal offal", the fatty material (even to the extent deemed to be derived from an oilseed), does not comprise an oilseed that has been subjected to heat treatment to reduce the concentration of anti-nutritional content as required by claim 2, nor does the fatty material comprise an

oilseed that has been subjected to a drying step and dehulled as required by claim 54.

Simply put, the Examiner fails to present any teaching that would cause one of ordinary skill in the art to co-process such components by cooking the mixture, followed by separation of the cooked mixture into a stickwater fraction, a protein-rich water-containing fraction, and an animal feed grade water mixture. The Bedford '357 patent is without question deficient on this point. Despite the Examiner's assertion, *no inference* based on the teachings of the reference(s) could occur that can overcome such deficiencies.

Such deficient teachings cannot, in contrast to the view of the Examiner, taken together, result in the claimed invention. Nor can "inferences" be drawn from such teachings that result in the claimed invention as asserted by the Examiner. The cited references, taken either singly or in combination, simply do not teach the process defined by applicant's claims.

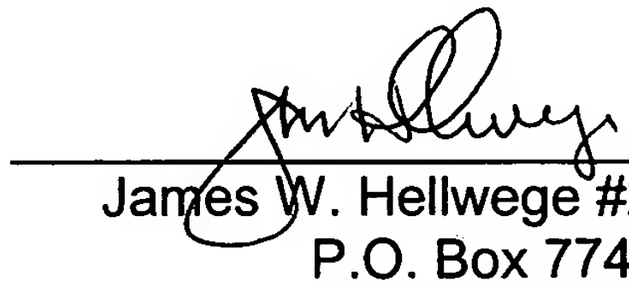
Given the above deficiencies in the references, the rejection under 35 USC 103(a) is without legal basis, and based solely on a hindsight reconstruction of the references in view of applicant's disclosure. The rejection should accordingly be withdrawn.

The application is in condition for allowance, and an early indication of same is earnestly solicited.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP



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Attachment: Translation of EP 1 074 605

Specification

[0001] The present invention relates to a manufacturing method for a food oil made from rape seeds or other oil seeds, where the rape or oil seed after moving through a sorting platform first shall be dried, broken up and sifted and, finally, following further preparation, shall be fed to a press. Moreover the present invention relates to apparatus with which to carry out said method. For the sake of simplicity, only rape seeds are considered below.

[0002] As regards conventional procedures for producing food oil, the rape seeds are processed without being previously damaged even though it is known to peel the rape seeds (German patent document DE 21 35 173, East German patent document DD 131 530 and German Offenlegungsschrift DE-OS 40 41 994).

[0003] One of the above documents (German patent document DE 21 35 173), relates to a method for peeling granular oil fruits during which the grains are subjected to impacts. The grains, which are quickly raised to a temperature of about 45° C are hurled by a cold airflow against impact baffles configured obliquely to the direction of flow. The grains broken up in this process are then mechanically and frictionally separated from the coat without oil extraction because being mixed with the airflow and being subjected to a helical motion between frictional walls.

[0004] The next cited reference (East German patent document DD 131 530) relates to a procedure for peeling seed grains containing oils and proteins, the coats being detached from the core flesh by deforming the seeds, whereupon the coat and the core flesh are separated from each other. The seed grains are subjected to defined deformation between two rigid surfaces to detach the coat from the core flesh, in a manner that the coat snaps off the flesh. Separation of the coat from the core flesh is carried out in a subsequent sifting procedure.

[0005] The German reference Offenlegungsschrift DE-OS 40 41 994 concerns a method and apparatus for peeling rape enabling making core fractions containing less than 5 % coats as required when processing the subsequently

recovered oil into motor fuel or also as regards other industrial purposes. This goal is attained by a combined application of pressure and impacts to the seeds. The resulting core fraction then can be directly fed to the processes subsequent to fuel recovery. This known procedure includes hot drying for instance at a temperature of 95 °C the cleaned rape seeds which then are peeled in a single rolling stage, the roller gap being 0.2 to 0.4 fold the mean seed grain diameter. The opened coats are separated by impacts from the core flesh during the pneumatically induced motion and optionally by wind sifting and electric separation of the coats from the core flesh. The industrial rape peeling assembly consists of a seed bin, a weighing scale, a roller peeler, a cyclone separator, a wind sifter and an electric separator. This known procedure incurs considerable industrial drawbacks. Hot seed drying entails well known degradation of the crude oils recovered from the thermally stressed material. The single rolling stage to resolve the seed into a wide grain spectrum using a roller gap of 0.45 mm crushes the seed and hence entails oil expulsion, making more difficult splitting the mixture in the subsequent sifting stage. Therefore the known procedure requires additional pneumatic motion including impact detachment and additional energy-costly wind sifting to separate unpeeled seed grains before the mixture is actually separated by the electric sifter.

[0006] Rape peeling has failed to secure practical significance. Instead, and so to speak, inevitably the rape seed first is squeezed and then pressed to completion when making food oil. On account of the high coat content relatively large amounts of waxes enter the food oil which thereby is of low quality. As a result the known procedures to recover food oil from oil seeds require oil purification in the form of chemical and physical refining.

[0007] Many attempts have been made to lower the press temperatures which are significantly higher than 40°C and arise perforce when processing unpeeled rape seeds on strainer screw presses on account of the high friction caused by the coats. Illustratively a screw-press fitted with costly cooling means for an annular strainer

basket already has been proposed (German patent document DE 41 09 229 C2). Continuously cooling the surrounding press configuration is intended to drain the high heat of friction during pressing in order to attain press temperatures below 38 °C.

[0008] To increase yield, conventional rape processing is carried out in equipment offering substantial processing capacities that hydro-thermally treat the seeds before pressing. Such equipment operates at conditioning temperatures up to 100 °C, compounding the effects of high press temperatures. As a result the contents of free fatty acids and phosphatides in the press oil are raised further compared to seeds that were not pre-heated.

[0009] By pressing the full seeds jointly with the coats, coat-specific ingredients such as chlorophyll, free fatty acids and tannins (bitter substances) move into the crude oil, degrading its quality beyond the negative effects of high press temperatures. Chlorophyll and its breakdown products acts as pro-oxidants, reducing life and degrading oil's sensory quality. The tannins degrade sensory capabilities and impart a bitter, grassy taste to the oil. The coats' waxes that have remained in the oil in spite of refining act as crystallization nuclei when stored in a cool ambience.

[1010] The high contents of undesired ingredients of intact rape seeds with coats accumulating during conventional processing must be subsequently removed from the crude oils. The oils pressed out of seeds that were not preheated are frequently subjected to steaming at temperatures above 100°C to improve keeping and sensory effects. The oils pressed out of conditioned seeds require being refined at a temperature > 200°C. The high temperatures arising in steaming and refining entail formation of transfatty acids which are nutritionally and physiologically detrimental and lower the contents in substantially volatile and valuable vitamins.

[1011] The objective of the present invention is to create both a method and apparatus for making cold-pressed food oil which can be used at once as a high-grade

food oil without incurring in its preparation energy-intensive refining or steaming that would thermally stress the oil.

[1012] The above problem is solved in that a method of the above kind comprises the following stages,

- the rape seeds are separated by a sieve machine into three fractions each of different particle sizes, namely into stock, into purified rape seeds and into degenerate grains,
- the purified and sorted rape seeds then are dried at a limit temperature below 40 °C to a water content of the intact rape seeds between 4.5 and 5.5 %, the stock and the degenerate grains being fed into a bin,
- then the dried rape seeds are ruptured in a roller assembly,
- thereupon the ruptured rape seeds -- the rape portion – is separated by sorting into three fractions of different particle sizes, namely into a first fraction, a useful fraction, and a fine fraction,
- the useful fraction is resolved in a sifter into peeled rapes and coats and the first fraction as well as the fine fraction are fed into the bin,
- thereupon the peeled rapes are moistened and next are flocculated in a further roller assembly, namely a flocculating assembly,
- next the flocculated peeled rape shall be cold-pressed in a press, and
- finally food oil is made by ridding the press oil issuing from the press from turbid matter.

[0013] In this method, the stock consists of foreign seeds, plant parts and various contaminants, the purified rape seeds consist of intact rape grains and a small proportion of plant parts and the degenerate grains of degenerate or ruptured rape grains, plant parts and fine dust.

[0014] Where called for, the rape seeds may be made to pass through a metal separator prior to sorting.

[0015] The food oil manufactured in the manner of the method of the invention contains only minute quantities of undesired ingredients. Accordingly this oil is of very high quality. Post-processing by steaming or refining therefore is superfluous. As regards this food oil, which offers a sensorily positive fine-nut idiosyncratic taste, the high contents of very volatile vitamins remain preserved. This feature is attained by removing the preponderant proportion of the rape coats and on account of the low press temperatures. According to present knowledge, it may be assumed that with the press oils issuing from the press at a limit temperature of less than 40 °C, no quality degrading effects are to be expected. When pressing the seeds substantially deprived of their coats in the absence of further pre-treatment, the said limit temperature as yet cannot be crossed downward on account of high friction in the strainer screw press.

[0016] The low temperature of drying, less than the limit temperature of 40 °C, precludes any quality-degrading enzyme activation whereas the narrow water-content spectrum from 4.5 to 5.5 % permits simplified seed peeling.

[0017] It was found that separating the rape seeds into three fractions advantageously is implemented in a manner that the stock's particle size is more than 1.1-fold the particle size of the average rape grain diameter, the particle size of the purified rape seeds being between 0.7-fold and 1.1-fold said diameter and the particle size of the degenerate grain being less than 0.7-fold that of said diameter.

[0018] The drying temperature of the purified and sorted rape seeds appropriately shall be at most 35 °C. This feature precludes in very substantial manner that the fatty acids be damaged, the proteins be denatured and the seed enzymes be activated.

[0019] In the present invention, rupturing the purified and refined rape seeds is carried out in two consecutive rolling procedures, namely initial and then final rupturings each carried out in a system of smooth rollers, the mean roller gap width in the initial rolling stage being adjusted to be larger than that of the final roller stage.

Appropriately the mean roller gap width in the initial rupturing stage and the mean roller gap width of the final rolling stage respectively shall be 0.4-fold to 0.5 fold and 0.3-fold and 0.4-fold the mean rape seed grain diameter.

[0020] The above double stressing at reduced rolling gap already assures coat detachment from the grain flesh jointly with a high seed resolution already during the rupturing phase. The defined deformation of the seed grains assures that the coat shall pop off without the grain flesh being crushed. Instead the rape core merely is broken down into its five natural elements, namely two outer and two inner nucleic leaves and the seedling, said elements being inter-connected only in a narrowly localized zone. As a result substantial oil discharge from the rape core elements is precluded.

[0021] In addition, it also was found to be advantageous that the separation of the rape portion into three fractions is carried out in a manner that the particle size of the initial fraction be 0.7-fold the mean rape grain diameter, the particle size of the useful fraction be between 0.2-fold and 0.7 fold said diameter and the particle size of the fine fraction be less than 0.2-fold said diameter.

[0022] To allow pressing the peeled rape at low coat content on screw presses at low temperatures, the peeled rape is conditioned by moisturization at a temperature below 40 °C, the water content being set at 5 to 7 %, preferably 5.5 to 6.5 %. By removing the rape coats of high water contents, the peeled rape water content was lowered by about 1 % relative to all of the seeds.

[0023] It was noted being especially advantageous that the peeled rape be conditioned at a temperature no higher than 35 °C.

[0024] In a further implementing mode of the invention, the moistened peeled rape is broken down on a flocculating roller assembly of smooth rollers and a slippage of about 5 %. On account of the water content set by the invention, the core flesh is made plastic enough that cracks are averted and high breakdown, namely a high proportion of mechanically opened cells, shall be attained.

[0025] When flocculating the peeled rape, the rolling gap between the smooth rollers of the flocculating roller unit is appropriately set in a manner that the mean width of the roller gap shall be 0.04-fold to 0.05 fold the mean rape grain diameter.

[0026] The byproducts collected in the bin may be used in another application, for instance as feeds

[0027] Besides the primary result of the novel method of the invention, namely to recover thermally minimally stressed, high grade food oils, the invention also attains three further effects. In the first place the pressed cakes from peeled rape seeds offer substantially higher nutritional value on account of reduced raw fiber content compared with unpeeled seed cakes. In the second place the wear on the screw press is less, and its power consumption lower, resulting in increased service life. In the third place the exploitation of the energy of the separated byproducts, in particular of the coat fraction, offers a CO_2 -neutral supply to production of both electrical and heat energy.

[0028] The apparatus implementing the method of the invention includes the following units arrayed in order:

- a sieve machine,
- a drier
- a roller assembly
- a further sieve machine
- a conditioner
- a flocculating roller assembly, and
- a press.

[0029] This apparatus allows carrying out the method of the invention in problem-free manner.

[0030] Said apparatus may be improved further when the roller assembly comprises two mutually superposed pairs of rollers fitted with glass plates, the gap between the upper two rollers being selected larger than that of the lower pair of

rollers. Appropriately the width of the gap of the upper pair of rollers is set to be 0.4 to 0.5 –fold the mean rape grain diameter and the gap width of the lower pair of rollers is set to be 0.3 to 0.4-fold the said diameter.

[0031] A further improvement of the above apparatus calls for the sifter resolving the useful fraction into peeled rape and coats being a wind sifter.

[0032] Advantageously the press is a continuously operating strainer screw press with a cake rupturing means.

[0033] The method of the invention and its apparatus are elucidated in relation to the appended drawings.

[0034] As shown by the drawing, and as regards the method of the invention, the supplied rape seed A.A first arrives at a metal separator 1 were metal parts A.B are separated from said seeds.

[0035] Thereupon the rape seeds A.A freed from said metal parts are separated in a sifter 2 into three fractions of different particle sizes, namely into a stock A.D, for instance straw or foreign seeds, into purified rape seeds A.E and into degenerate grains A.F, including also initial grain. Thereupon the purified and sorted rape seeds A.E are dried in a drier 3 and then are ruptured. The stock A.D and the degenerate grain A.F are fed into a bin 12.

[0036] The rupture of the dried rape seeds A.G appropriately is carried out in a roller assembly 4 comprising two mutually superposed pairs of rollers, in two consecutive rolling procedures. Both pairs of rollers are fitted with smooth rollers running without slippage. First the upper pair of rollers of the roller assembly 4 carries out pre-rupturing and then the lower pair of rollers carries out post-rupturing, the rolling gap in the upper pair of rollers being selected to be larger than that of the lower pair of rollers.

[0037] The ruptured rape seeds, namely the rape portion A.H, are separated in a further sifter 5 into three fractions of different particle sizes, namely into an initial fraction A.J consisting of slightly ruptured rape seeds or of rape seed

ingredients, into a useful fraction A.M consisting of mutually detached rape coats and rape core elements, and into a fine fraction A.N consisting of rape coat particles and rape core flesh particles. The useful fraction A.M is resolved in a sifter 7 into peeled rape A.O consisting of rape core elements having a low proportion of core flesh particles, whereas the initial fraction A.J is fed by a dispenser 6 as indicated by "A.K" back into the roller assembly 4 or, as indicated by "A.L", into the bin 12. The sifter 7 may be a wind sifter or an electric sifter.

[0038] The peeled rape A.O is denoted by P.A within the pressing procedure. The water content of the peeled rape P.A. is increased in conditioning equipment 8, namely by cold water wetting. Next the peeled rape P.A is broken down without preheating in a flocculating roller unit 9 using smooth rollers and applying a defined shearing field.

[0039] The flocculated peeled rape P.C is then cold-pressed in a press 10 which is appropriately designed as a strainer screw press fitted with cake breakers and the press oil P.D so recovered is separated into food oil P.F and filter cakes P.E. The filter cake P.E is fed back into the press 10.

[0040] The mixture P.H of the byproducts, namely stock A.D, degenerate grain A.F, initial fraction A.L, fine fraction A.N and coats A.P accumulated in the bin 12 may be used as feed or as fuel for energy purposes.